
REGULATION

Regulation for the Certification of Operating Personnel at Nuclear Facilities (FANR-REG-17)

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Federal Authority for Nuclear Regulation (FANR)

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Preamble

This regulation is issued by the Federal Authority for Nuclear Regulation pursuant to the powers conferred to its Board of Management in Article 11(4) and Article 38(1) of the Federal Law by Decree No. 6 of 2009 Concerning the Peaceful Uses of Nuclear Energy (the Law).

Definitions

Article (1)

- For purposes of this regulation, the following terms shall have the meaning ascribed to them in Article 1 of the Law, unless the context requires otherwise: Accident, Authority, Commissioning, Construction, Emergency/Emergencies, Licence, Licensee, Nuclear Facility, Nuclear Reactor, Nuclear Security, Operation, Regulated Activities, Safety, and State.
- In addition, the following capitalised terms shall have the meanings set forth below:

Certification/ Recertification/ Certificate/Certified	An approval by the Authority of an Individual to perform the duties of a Reactor Operator or a Senior Reactor Operator.
Full Scope Representative Simulator	A simulator incorporating detailed modelling of the Licensee's Nuclear Reactor under normal Operation, transient, and Accident conditions with which the Individual interfaces in the actual control room environment.
Individual(s)	The employee(s) of: (1) the applicant for a Licence to conduct a Regulated Activity relating to a Nuclear Facility, or (2) the Licensee.
Limited Scope Representative Simulator	A simulator incorporating detailed modelling of the Licensee's Nuclear Reactor under normal Operation, transient, and Accident conditions with which the Individual interfaces in an environment that is different from the actual control room.

Local Operator (LO)	An Individual, qualified by the Licensee, who manipulates structures, systems, and components, normally outside the control room, under the direction of Reactor Operators and Senior Reactor Operators.
Operating Personnel	The Senior Reactor Operators, the Reactor Operators, and the Local Operators at a Nuclear Facility.
Reactor Operator (RO)	An Individual who manipulates the controls at the Nuclear Reactor, particularly the controls affecting the reactivity of the Nuclear Reactor in the control room, and holds a valid Certificate.
Safety Culture	The assembly of characteristics in a Licensee's organisation and the attitude of Individuals, which establishes that protection and Safety issues as an overriding priority receive the attention warranted by their significance.
Security Culture	The characteristics in a Licensee's organisation and attitude of Individuals, which establish that Nuclear Security issues receive the attention warranted by their significance.
Senior Reactor Operator (SRO)	An Individual who oversees and directs the activities of ROs and LOs in the control room of a Licensee's Nuclear Facility. The SRO may manipulate the controls at the Nuclear Reactor, particularly the controls that affect the reactivity of the Nuclear Reactor, and holds a valid Certificate.
SRO Qualified Instructor	A training programme instructor who has successfully completed an SRO training and qualification programme, participates in the continuing training programme of the Operating Personnel of the Licensee and satisfactorily completes biennial requalification examination requirements to maintain SRO-level knowledge.

Objective and Scope

Article (2)

1. This regulation establishes requirements for the training, qualification, and Certification of Operating Personnel.
2. The requirements of this regulation shall apply to the applicant for a Licence, or to a Licensee holding a Licence to conduct a Regulated Activity related to a Nuclear Facility that is a Nuclear Reactor.

General Requirements

Article (3)

1. The Licensee shall establish and maintain programmes for the training and qualification of Operating Personnel. The Licensee shall detail these programmes in a comprehensive training plan for Operating Personnel, which shall be submitted to the Authority for approval prior to its implementation.
2. The comprehensive training plan shall:
 - a) Outline the education and work experience requirements for joining the Operating Personnel training and qualification programme.
 - b) Describe a formal training and qualification process for the Operating Personnel, including a description of the structure and content of each training programme – both initial and continuing – and examinations.
 - c) Emphasise the paramount importance of Safety in all aspects of the Operation of the Nuclear Facility.
 - d) Describe the provisions for periodic confirmation of competence and the continuing training of the Operating Personnel.
 - e) Provide the basis, including the identification of any industry standard used, for ensuring that Full Scope Representative Simulators and Limited Scope Representative Simulators are used in the implementation of the training plan.
3. Changes to the elements of the comprehensive training plan listed in Article 3(2) of this regulation are subject to Authority approval.

Education and Experience Requirements for Admission to Initial Training and Qualification Programmes for Operating Personnel

Article (4)

1. The Licensee shall establish a systematic process to select Individuals for admission to the initial training and qualification programmes administered by the Licensee for Operating Personnel.
2. For admission to the Licensee's initial LO training and qualification programme, the Individual shall have a high school diploma or equivalent.
3. For admission to the Licensee's initial RO training and qualification programme, the Individual shall meet the following criteria:
 - a) The Individual shall have a high school diploma or equivalent; and
 - b) The Individual shall have performed duties as an LO for at least thirty-six (36) months and be fully qualified as an LO at the Licensee's Nuclear Facility; or
 - c) The Individual shall have worked as an RO or an SRO at a Nuclear Facility other than the Licensee's Nuclear Facility for at least twenty-four (24) months; worked at the Licensee's Nuclear Facility for at least twelve (12) months, and worked as part of an operating crew for at least six (6) of those twelve (12) months; or
 - d) The Individual shall have relevant work experience of at least twenty-four (24) months at a fossil fuel facility or at a Nuclear Facility of a different type to the Licensee's Nuclear Facility. In addition, the Individual shall have worked at the Licensee's Nuclear Facility for at least twelve (12) months, and worked as part of an operating crew for at least nine (9) of those twelve (12) months.
 - e) The Individual shall have a security clearance from the competent authorities in the State obtained for the Individual by the Licensee.
4. For admission to the Licensee's initial SRO training and qualification programme, the Individual shall meet the following criteria:
 - a) The Individual shall have a high school diploma or equivalent; and
 - b) The Individual shall have performed duties as an RO for at least twenty-four (24) months at the Licensee's Nuclear Facility; or
 - c) The Individual shall have a bachelor of science degree (BSc) or equivalent in engineering, engineering technology, or related sciences and, the Individual shall have at least twenty-four (24) months of relevant nuclear-related work experience at the Licensee's Nuclear Facility, performing duties as an LO for at least twelve (12) of those twenty-four (24) months; or
 - d) The Individual shall have worked as an RO, SRO, or SRO Qualified Instructor for at least twenty-four (24) months at a Nuclear Facility other than the

Licensee's Nuclear Facility. In addition, the Individual shall have worked at the Licensee's Nuclear Facility for at least twelve (12) months and worked as part of an operating crew for at least six (6) of those twelve (12) months. The Individual shall have completed the Licensee's prescribed field tasks for SRO candidates.

- e) The Individual shall have a security clearance from the competent authorities in the State obtained for the Individual by the Licensee.
5. An applicant for a Licence to conduct a Regulated Activity related to a Nuclear Facility shall establish and administer a systematic process for admission of Individuals to the initial training and qualification programmes for Operating Personnel, which shall include the following admission criteria:
- a) For admission to the initial LO and RO training and qualification programme of the applicant for the Licence, the Individual shall meet the following criteria:
 - i. The Individual shall have a high school diploma or equivalent; and
 - ii. The Individual shall have a security clearance from the competent authorities in the State obtained for the Individual by the applicant of the Licence.
 - b) For admission to the initial SRO training and qualification programme of the applicant for the Licence, an Individual shall meet the following criteria:
 - i. The Individual shall have a high school diploma or equivalent; and
 - ii. The Individual shall have worked previously as an RO or an SRO for a Nuclear Facility; or
 - iii. The Individual shall have a bachelor of science degree (BSc) or equivalent in engineering, engineering technology, or related sciences.
 - iv. The Individual shall have a security clearance from the competent authorities in the State obtained for the Individual by the applicant of the Licence.
6. The admission requirements set out in Article 4(5) of this regulation shall:
- a) Apply only for the Commissioning and Operation of a Nuclear Facility following the Construction of the said Nuclear Facility; and
 - b) Terminate after completion of the first refuelling outage at the Nuclear Facility referred to in Article 4(6)(a) of this regulation.

Training and Qualification Programmes for ROs and SROs

Article (5)

1. The Licensee shall establish and maintain performance-based programmes for initial and continuing training and qualification of ROs and SROs and for periodic confirmation of their competence. The content of each programme shall be based on a Systematic Approach to Training (SAT). The training and qualification programmes shall promote Safety Culture and Security Culture.
2. The training and qualification programmes shall ensure that the following minimum requirements are met:
 - a) The programmes shall provide the necessary training and instruction to enable the Individuals to perform their duties competently and correctly for the different operational states of the Nuclear Facility and in the event of an Emergency, in accordance with the appropriate operating or Emergency procedures;
 - b) Individuals shall have a sufficient understanding of the Nuclear Facility, its Safety features, procedures, conduct of Operations, and operational limits and conditions;
 - c) Individuals shall have sufficient relevant competencies, such as managerial and supervisory skills, and communication and language skills, to perform their duties properly and with due attention to Safety;
 - d) The Individuals taking part in the training and qualification programmes for ROs and SROs shall be familiar with the symptoms of Accident conditions and with the procedures for Accident management.
3. Operating experience from events at the Licensee's Nuclear Facility, as well as events at other relevant Nuclear Facilities, shall be appropriately factored into the training and qualification programmes of the Licensee. The programmes shall consider the causes of the events and the implementation of corrective actions to prevent their recurrence.
4. Individuals shall complete the relevant training and qualification programme before they are assigned duties related to or involving items important to Safety.
5. The Licensee shall develop and implement continuing training to be administered after the initial Certification of ROs and SROs.
6. The Licensee shall develop and implement a system for the assessment and improvement of its training and qualification programmes for ROs and SROs.
7. The Licensee shall maintain the highest standards of security and integrity throughout the implementation of the training and qualification programmes and the conduct of examinations.

Training Programme Resources

Article (6)

1. The Licensee shall ensure that adequate facilities are provided for classroom training and self-study. The Licensee shall provide appropriate training materials for the training and qualification programmes.
2. Full Scope Representative Simulators and Limited Scope Representative Simulators shall be used for training and examinations. Simulator-based training shall incorporate training for all operational states of a Nuclear Facility and the most risk-significant Accident sequences.
3. A system shall be in place for the timely modification and updating of the Full Scope Representative Simulators, Limited Scope Representative Simulators, and training materials to ensure that they accurately reflect the conditions of the Nuclear Facility.
4. Training instructors and examiners shall be technically competent in their assigned areas of responsibility. They shall have the necessary instructional skills and shall also be familiar with routines and work practices at the Licensee's Nuclear Facility. The Licensee shall establish qualification requirements for the training instructors.

Examinations and Tests

Article (7)

1. The training and qualification programmes shall comprise written examinations – typically generic fundamentals examinations and Nuclear Facility specific systems examinations – and performance-based operating tests, as appropriate, to confirm that an Individual meets all the requirements of the training and qualification programme.
2. The written examinations and performance-based operating tests shall contain a representative selection of questions and exercises that test the Individual's knowledge, skills and abilities needed in order to carry out the duties of an RO and/or SRO. The knowledge, skills, abilities and learning objectives shall be derived from a systematic analysis of Operating Personnel duties and from information in the Nuclear Facility's final safety analysis report, system description manuals, procedures pertinent to the Operation of the Nuclear Facility, regulatory requirements, and the Licence.
3. Written examinations and performance-based operating tests shall be substantially different to the last version of each test administered by the Licensee and undertaken by the Individual. Additionally, the Licensee shall establish a process to ensure that the written examinations and performance-based operating tests will cover diverse objectives across the Safety-significant systems, procedures, and topics.

4. The performance-based operating tests shall comprise scenarios conducted in a Full Scope Representative Simulator and job performance measures conducted in the Nuclear Facility and in either a Full Scope Representative Simulator or Limited Scope Representative Simulator. The scenario portion of such tests shall focus on communication skills and teamwork, the ability to use and implement normal Operation and Emergency procedures, and knowledge of immediate actions required for specific Emergencies.
5. The Licensee shall prepare, proctor, and grade the written examinations, and shall prepare and evaluate the performance-based operating tests.
6. If an Individual has passed a generic fundamentals examination outside of the Licensee's comprehensive training plan, the result of that exam can be accepted as part of the Licensee's training and qualification programme specified in Article 8(2) of this regulation and can be used to satisfy the Certification requirements, provided that:
 - a) The exam was relevant to the same type of Nuclear Reactor as the one at the Licensee's Nuclear Facility; or
 - b) The Individual has participated in an RO or SRO training programme that maintains proficiency in generic fundamentals examination topics within the last two (2) years.
7. If an Individual has passed a generic fundamentals examination administered by the Licensee and more than two (2) years have elapsed since the Individual participated in an RO or SRO training programme that maintains his/her proficiency in generic fundamentals examination topics, the result of that exam shall not be used to satisfy Certification requirements.

Reactor Operator and Senior Reactor Operator Certification

Article (8)

1. The application for RO or SRO Certification submitted by the Licensee to the Authority shall include:
 - a) A statement that the Licensee finds the Individual to be trustworthy, reliable, and competent to carry out the duties of an RO or an SRO;
 - b) Demonstration of the Licensee's need for an RO or an SRO;
 - c) Evidence that the Individual has successfully met all the requirements of the Licensee's RO or SRO training and qualification programmes described in the Licensee's comprehensive training plan;
 - d) Details of the Individual's education, training, and qualifications, in addition to a statement of medical fitness to perform the duties of an RO or an SRO. Individuals shall be medically examined within six (6) months of Certification

and every twelve (12) months from the date of issuance of the Certificate to ensure their fitness for the duties and responsibilities assigned to them;

- e) Documents for the Authority to apply to the competent authorities in the State for a security clearance for the Individual to work as an RO or SRO at the Licensee's Nuclear Facility.
2. If the Individual has completed a qualification and training programme that is different from the one approved by the Authority and described in Article 5 of this regulation, the application shall include the applicable elements of Article 8(1) in addition to the following:
 - a) Justification for why the Individual could not or should not be integrated into the Licensee's approved RO or SRO training and qualification programme;
 - b) Description of content and dates of the different training programmes attended, including compliance with the requirements specified in Article 7(6)(a) and Article 7(6)(b) of this regulation;
 - c) Details of the Individual's qualifications;
 - d) Description of the courses administered by the Licensee to account for any differences needed for qualification of an RO or an SRO; and
 - e) Description of experience in start-up and shut-down Operations, abnormal Operations, and Accident conditions in both the Licensee's Nuclear Facility and on the Full Scope Representative Simulator or Limited Scope Representative Simulators.
 3. If an Individual was previously Certified by the Authority and his/her Certificate has been withdrawn by the Authority for a period of less than two (2) years, the Licensee may apply for Recertification of the Individual. The application for Recertification shall include the information specified in Article 8(2) of this regulation. The Authority shall determine whether the application is sufficient or if the Individual shall complete the training and qualification programmes for initial Certification described in Article 5 and Article 7 of this regulation.
 4. If an Individual was previously Certified by the Authority and his/her Certificate has been withdrawn by the Authority for two (2) years or more, the Individual is required to complete the training and qualification programmes for initial Certification described in Article 5 and Article 7 of this regulation. The application by the Licensee for a new Certificate shall be submitted in accordance with Article 8(1) of this regulation.
 5. Before the expiry of the validity of a Certificate, the Licensee may apply to the Authority to renew the Certificate of an Individual. An application shall demonstrate that the Individual has completed the requirements for periodic confirmation of competence and continuing training in accordance with the comprehensive training plan of the Licensee, and that the medical condition, fitness for duty, and security clearance requirements specified in Article 10 of this regulation, continue to be met by the Individual.

Refusal to Certify

Article (9)

1. If the Authority is not satisfied with the submitted evidence of competence, qualifications, medical fitness or security clearance of the Individual, the Authority may refuse to Certify the Individual after reviewing the application from the Licensee.
2. The Authority shall notify the Licensee of its decision to refuse to Certify an Individual, and shall specify the basis of the decision.

Conditions of the Validity of Certificates

Article (10)

1. A Certificate shall expire five (5) years from the date of its issuance by the Authority. Prior to the expiry of its validity, the Certificate may be renewed by the Authority multiple times for an equivalent period in accordance with Article 8(5) of this regulation.
2. The validity of a Certificate shall be limited to the Nuclear Facility specified by the Licensee in the application for the Certificate.
3. The Certificate is subject to, and a Certified Individual shall observe, all applicable legislation, regulations, and decisions of the Authority, in addition to the rules, procedures and decisions of the Licensee.
4. Certified Individuals must be medically fit for the duties and responsibilities of an RO or an SRO as per the competent health authority requirements. The Licensee shall ensure that Certified Individuals are medically examined every twelve (12) months from the date of issuance of the Certificate. The medical tests shall include all occupational tests required by the competent health authority in the State. All the results of such medical tests shall be satisfactory and within the approved limits of the competent health authority.
5. Certified Individuals shall meet the requirements of the Licensee's fitness for duty programme in accordance with the requirements of the Authority's Regulation on the Physical Protection of Nuclear Material and Nuclear Facilities (FANR-REG-08), as amended by the Authority.
6. In order to maintain their competence and proficiency, Certified Individuals shall actively perform the functions of an RO or an SRO for a minimum of either seven (7) shifts of eight (8) hours or five (5) shifts of twelve (12) hours per calendar quarter. An SRO shall actively perform the duties of an SRO for at least two (2) of the aforementioned required shifts per calendar quarter in order to maintain competence and proficiency.

7. Certified Individuals shall complete the periodic confirmation of competence and continuing training and qualification programme described in the comprehensive training plan.

Withdrawal of Certificates

Article (11)

1. The Authority may withdraw a Certificate from any Individual who does not comply with the conditions of the Certificate set out in Article 10 of this regulation, or for any conduct considered by the Authority a risk to the Safety or Operation of the Nuclear Facility.
2. The Authority shall notify the Licensee and the Certified Individual of the Authority's decision to withdraw a Certificate from that Individual specifying the basis for the decision at least thirty (30) days before the withdrawal of the Certificate.
3. If a Certificate was withdrawn from an Individual, the Licensee may apply for a new Certificate in accordance with the requirements of Article 8 of this regulation. If a Certificate is withdrawn due to the conduct of the Individual, which was considered by the Authority a risk to the Safety or Operation of the Nuclear Facility, the Licensee shall, in addition to the requirements of Article 8 of this regulation, demonstrate that the reason for withdrawal of a Certificate has been corrected.
4. The Authority shall withdraw a Certificate from any Individual whose Certificate does not meet the conditions of the validity of Certificates for a period of two (2) consecutive years.

Local Operator Qualification

Article (12)

The Licensee shall conduct initial and continuing training and qualification programmes for Individuals to perform the functions of LOs in accordance with the Licensee's comprehensive training plan. Such programmes shall involve written examinations and performance-based operating tests, the latter of which shall comprise job performance measures conducted in the Nuclear Facility.

Notifications and Records

Article (13)

1. The Licensee shall submit to the Authority a list of applicants proposed for admission to RO and SRO training and qualification programmes for initial Certification at least sixty (60) days prior to the start of the programme. Changes to the initial list of applicants shall be submitted to the Authority at least fifteen (15) days prior to the start of the programme.

2. The Licensee shall notify the Authority at least sixty (60) days in advance of the conduct of all written examinations and performance-based operating tests referred to in Article 7 of this regulation for initial Certification and biennial qualification of ROs and SROs. The notification shall include the names of the Individuals to be tested and the planned schedule for the testing to facilitate the Authority review of the written examinations and performance-based operating tests prior to their administration.
3. The Licensee shall notify the Authority when a Certificate does not meet the conditions of validity in accordance with Article 10 of this regulation. The notification shall be submitted within three (3) working days of discovering the condition and it shall identify the Individual and reasons for the Certificate not meeting the validity conditions. In addition, it shall protect the personal or medical information of Individuals in accordance with applicable legislation.
4. The Licensee shall submit a report to the Authority every six (6) months summarising the activities carried out under the approved comprehensive training plan, including a summary of any changes in the validity of Certificates and any changes made to the approved comprehensive training plan, taking into account the requirements specified in Article 3(3) of this regulation.
5. The Licensee shall prepare and maintain the records necessary to demonstrate that Operating Personnel were trained and qualified in a manner consistent with this regulation.
6. The Licensee shall maintain up-to-date records for each Certificate showing the date of Certifications, suspension and/or withdrawal of Certificates, status of periodic confirmation of competence and continuing training, date of records confirming medical fitness for duty, and security clearance.
7. Records that must be maintained with this Article shall meet the requirements of the Authority's Regulation for Leadership and Management for Safety in Nuclear Facilities (FANR-REG-01), as amended by the Authority. The Licensee shall establish and maintain adequate security measures to protect the records against tampering or loss.

Entry into Force

Article (14)

This regulation shall be published in the Official Gazette and shall enter into force six (6) months following the date of its publication.